PROJECT No - 02

OBJECT DETECTION SYSTEM USING ULTRASONIC SENSOR

EXERCISE : OBJECT DETECTION SYSTEM WITH ULTRASONIC SENSOR

Aim: If Ultra Sonic Sensor detects any object within 50cm the LED should be turned ON Else LED Should be turned OFF.

1. **Make a Flowchart.**
2. **Design the Circuit in TinkerCAD Software.**
3. **Develop the Visual Program.**
4. **Make the actual circuit and upload the C++ Code.**

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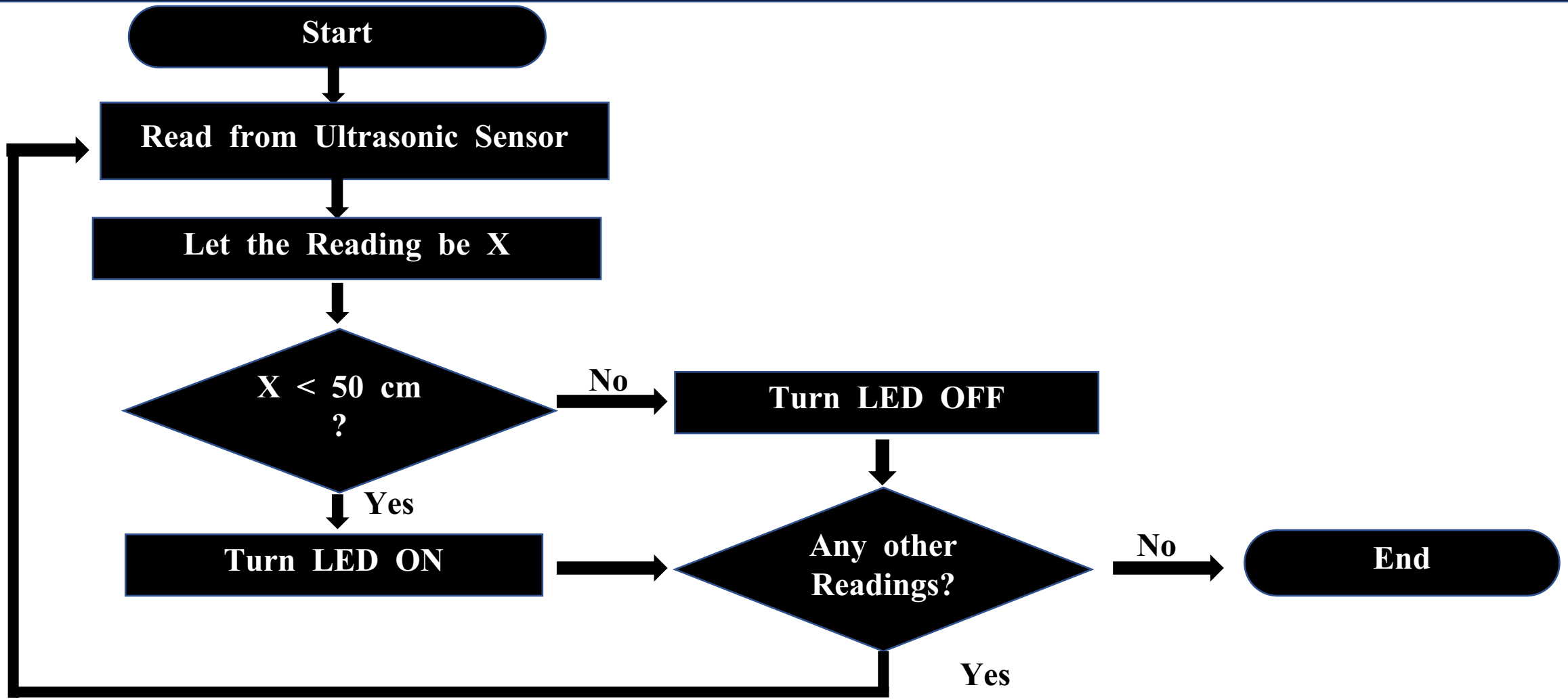
FLOWCHART



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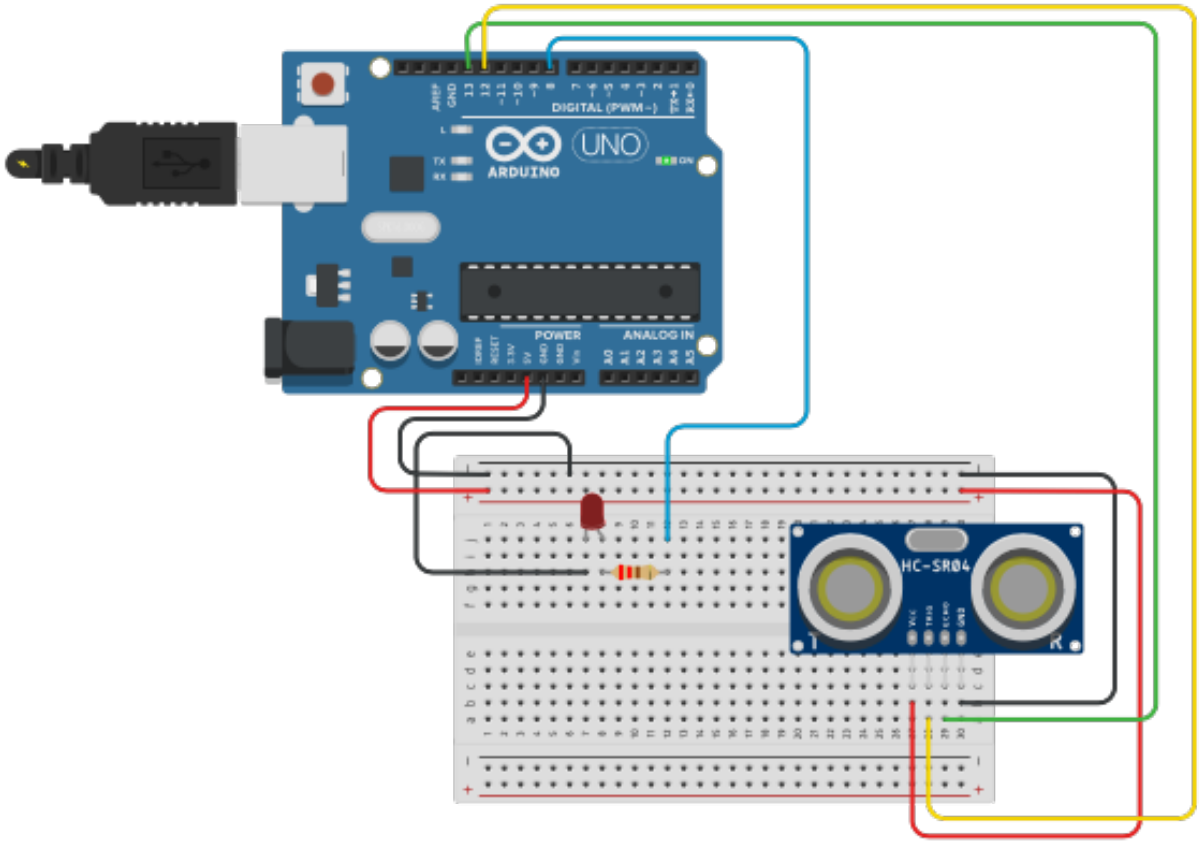
CIRCUIT IN TINKERCAD



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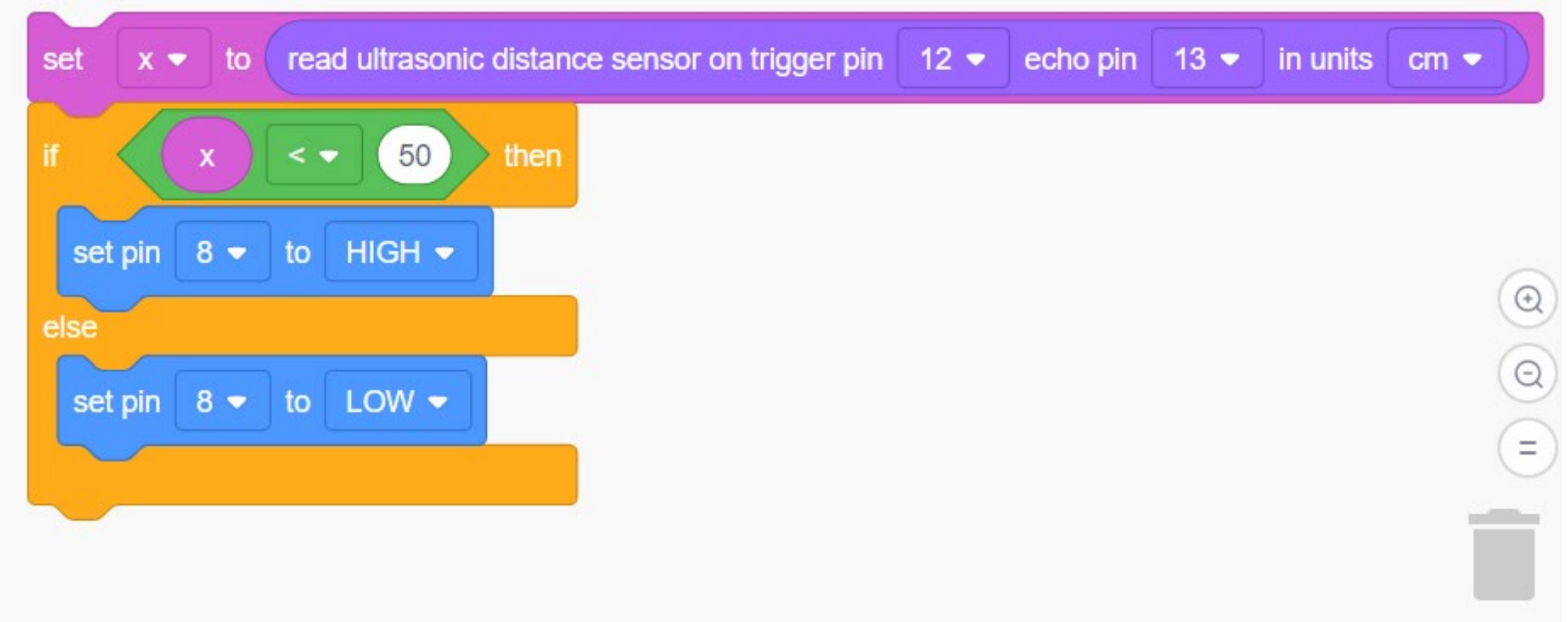
SCRATCH PROGRAM


set x to read ultrasonic distance sensor on trigger pin 12 echo pin 13 in units cm
if x < 50 then
set pin 8 to HIGH
else
set pin 8 to LOW

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C++ CODE

```
// C++ code
//
int x = 0;

long readUltrasonicDistance(int triggerPin, int echoPin)
{  pinMode(triggerPin, OUTPUT);  // Clear the trigger
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
  // Sets the trigger pin to HIGH state for 10
microseconds
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
  pinMode(echoPin, INPUT);
  // Reads the echo pin, and returns the sound wave
travel time in microseconds
  return pulseIn(echoPin, HIGH);}

void setup()
{ pinMode(8, OUTPUT);}

void loop()
{   x = 0.01723 * readUltrasonicDistance(12, 13);
  if (x < 50)
 { digitalWrite(8, HIGH); }
else { digitalWrite(8, LOW); }
  delay(10); // Delay a little bit to improve simulation
performance}
```

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